AUTOMATIC CONTRAST ENHANCEMENT IMAGES ACQUIRED BY SECURITY, SURVEILLANCE, AND SITUATIONAL AWARENESS SYSTEMS USING TWO RECENT HISTOGRAM BASED TECHNIQUES

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Abstract

Military operations in urban terrain (MOUT) scenarios also call for distributed information gathering and processing capabilities. Video cameras abound in civilian life wherever security is of interest (e.g., in commerce, transportation, education, entertainment and so forth). The viability of distributed security and surveillance capabilities is enabled by the advent of low-cost cameras, computers, and networking technology (both wired and wireless). Sometime the images captured by these cameras are poor lighting conditions (e.g., photograph at night, or carry the situation facing toward the light). Due to these constrained imaging conditions, images acquired by these systems may exhibit low contrast. The goal of this effort is applied two recent histogram based techniques to these images and ascertains which of these techniques are better suited across a variety of images from different sensors and having varying characteristics. The recent techniques are low-complexity histogram modification technique (LCHM) and weighted thresholded histogram equalization technique (WTHE). Based on the visual quality and using Mean Square Error (MSE), Absolute Mean Brightness Error (AMBE) and the discrete entropy (H), are the most common measures of picture quality in image processing, we conclude that the WTHE technique variant of the LCHM technique and it applied for automatic contrast enhancement across a wide variety of images acquired by security, surveillance, and situational awareness systems.